

valuable observations of Mr. C. Spence Bate\*, this character of the basicerite is well shown in representations of the Zoea of *Carcinus maenas*. Here we have the joint in question very large, armed with a long spine on one side and the exocerite on the other, while the rest of the antenna is in a rudimentary condition, and there is no coxocerite visible. This latter joint, with its areola, makes its appearance at a later date, at the base of the basicerite.

The large comparative size of the exocerite in the embryo is in accordance with what we observe in the gradations of adult Crustacea. Those lowest in the series have generally the external branch of their members most developed; as we rise in the scale, we observe the inner branch becoming more and more developed, while the outer branch is reduced, and may disappear entirely. Compare, for example, the thoracic feet of some Schizopods with those of the Caridea and Brachyura.

XXVI.—Notes on rare and little-known Fishes taken at Madeira.

By JAMES YATE JOHNSON, Cor. Mem. Z. S.

No. III.

Fam. Pleuronectidæ.

*Solea oculata*, Risso.

D. 68. A. 51. P. 7. V. 4. C. 15.

Left side white; right side a pale brown, marbled with deeper brown. On the anterior part of the body are five large patches of very dark brown. The tail is also of this colour, and the patch is divided from the paler colour of the body by a series of six yellow spots. The most noticeable markings on the right side of the body consist of four round or oval dark-brown, almost black spots, each surrounded by a ring of small bright yellow spots. These are arranged in two pairs, the members of each pair being placed over against each other at the base of the dorsal and anal fins respectively. A line drawn from one spot of the first pair to the other would divide the fish into two nearly equal portions. All the fins are edged with white. At the base of the caudal fin there is a narrow band of pale brown; the rest of the fin is a darker brown. The irides of the eyes are bright greenish-blue, surrounded by a ring of gold.

The length of the head, compared with the total length, is as 1 to  $5\frac{1}{3}$ ; the height, to the total length, is as 1 to 3.

There are numerous soft papillæ in the neighbourhood of the

\* Phil. Trans. 1858, pl. xl. f. B 3, &c.

mouth on the left side of the body, and this side of the body is rough with ciliated scales. Both jaws are set with minute teeth, but only on the left side.

The *dorsal* fin commences in front of the eyes, is rounded behind, and is distinct from the *caudal*, which latter is slightly rounded. The *anal* fin does not join the caudal, but terminates over against the end of the dorsal. On both these fins a series of small roughly ciliated scales extends along each ray. Both are coloured pale brown, with dark brown spots forming irregular lines. The left *pectoral* fin is shorter than the right in the proportion of 2 to 3.

Between the opercle and the caudal fin 70 scales were counted, and in the height about 44. The lateral line is straight throughout.

A single example of this species has occurred, which was taken in the month of February. It had a length of  $5\frac{3}{8}$  inches, and a height of 2 inches. The right pectoral fin was  $\frac{3}{8}$  inch long. The fish took fifty inspirations per minute. This Mediterranean species has been taken at the Canaries, and has been described by M. Valenciennes in Webb and Berthelot's 'Hist. Nat. des Canaries.' That naturalist assigns 50 rays to the dorsal fin; but this may possibly be a mistake of the printer; and he says that he found 50 rays in the anal fin, 8 rays in the pectoral fin, and 5 in the ventral fin. He counted only 60 scales along the flank.

*Rhombus cristatus*, Lowe, Trans. Zool. Soc. iii. p. 15.

D. 94. P. 10. V. 6. A. 74. C. 17.

Elliptico-oblong, sole-like; the right side white, the left side a palish sepia-brown, faintly marbled with deeper brown. The height of the body to the total length is as 1 to  $2\frac{4}{5}$ , and the head to the total length is as 1 to  $4\frac{1}{3}$ . The oval eyes are close together, being only separated by a simple crest. The hinder one is distant by about its own longer axis from the snout. The iris next the mesial line of the body is spotted with white, is much wider than on the outer side, and makes an angular projection upon the pupil. There are minute pointed *teeth* on both sides of both jaws; and I can only detect one row of each, although Mr. Lowe says, "dentibus in maxilla superiore uniseriatis, in inferiore anguste scobinatis."

The *dorsal* fin commences, on the right side of the body, in front of the eyes, and extends almost to the caudal fin. Some of the rays at its fore end are produced (in the specimen the second, third, fifth, and sixth), and these rays are free for much of their length. The pointed *pectoral* fins are small, that on the

left side being longer. They are inserted below the middle of the height. The first ray is very short. The left *ventral* fin commences much before the right fin, whilst it extends quite as far back. They are inserted in front of the pectoral fins, and are both short. The *anal* fin commences immediately behind the vent, gradually decreases in height backwards, and terminates opposite the end of the dorsal. The *caudal* fin is pointed, and is about as long as the longer pectoral.

The scales are rather large, and have their free edges pectinate. The *lateral line* forms an arch over the root of the pectoral fin, and is then straight along the middle of the body to the base of the caudal fin. Its scales are about 62 in number; the scales in the height are about 33, the number above being equal to the number below the lateral line at the middle of the fish.

This rare fish, of which only one example has occurred (taken in the month of February, is easily distinguished from the much commoner *Rhombus maderensis*, Lowe, by its elongate sole-like form, the approximate eyes, the produced rays at the fore end of the dorsal fin, and the absence of pale annular markings on the coloured side of the body.

	inches.
Total length .....	5 $\frac{6}{10}$
Height, nearly .....	2
Head .....	1 $\frac{3}{20}$
Eyes, greater axis .....	$\frac{4}{10}$
Dorsal, length of 2nd and 3rd rays .....	1
Pectorals, length of left fin .....	1 $\frac{9}{20}$
„ distance from snout .....	1 $\frac{1}{5}$
Ventrals, length of left fin .....	$\frac{10}{6}$
Caudal, length .....	$\frac{19}{20}$
„ width of base .....	$\frac{6}{10}$

## Order ACANTHOPTERYGII, Cuv.

### Fam. Triglidae.

#### *Scorpena ustulata*, Lowe, = *Sc. scrofa*, Linn.

There lately came into my hands three specimens of a *Scorpena* which seem to prove that the fishes from which Mr. Lowe sketched a new species, that of *Sc. ustulata* (Proc. Zool. Soc. 1840, p. 36, and Trans. Zool. Soc. iii. p. 2), were merely young specimens of *Sc. scrofa*, a common fish at Madeira. As it is of much importance that all false species should be expunged from our books, I will state the facts that have led me to conclude that *Sc. ustulata* falls into this category.

All three specimens have the occipital depression which Dr. Günther has pointed out as specially distinguishing the artificial

genus *Scorpena* from that of *Sebastes*; and there can be no hesitation in ascribing all three to the same-species, whatever that may be. The longest has a total length of  $7\frac{8}{10}$  inches, and a height of  $2\frac{1}{4}$  inches. The head measures  $2\frac{5}{8}$  inches in length, the eye  $\frac{3}{4}$  inch in diameter. The distance from eye to eye is  $\frac{7}{16}$  inch. The pectoral and ventral fins are respectively  $1\frac{7}{8}$  and  $1\frac{1}{2}$  inch long. These dimensions correspond closely with those given from Mr. Lowe's notes in Dr. Günther's 'Catalogue of Acanthopterygian Fishes,' vol. ii. p. 112. The second specimen is  $6\frac{8}{10}$  inches long, and the third  $6\frac{1}{2}$  inches.

The diagnosis of *Sc. ustulata* given in the Catalogue, and there stated to have been drawn up from Mr. Lowe's manuscript notes, is this:—

“D.  $\frac{12}{9}$ . A.  $\frac{3}{5}$ . (L. lat. 24). Vert. 10/14.

“The height of the body is  $3\frac{2}{3}$  in the total length, the length of the head nearly three times. The head is scaleless, but *the cheeks and opercles are pustulate or granulated*. The length of the snout is one-fourth that of the head, the width of the space between the orbits one-seventh or one-eighth. Space between the orbits deeply concave (groove on the crown of the head as in *Sc. scrofa*); orbital tentacles none or small. The fourth dorsal spine is the longest; the anal spines as in *Sc. scrofa* (the second the longest). A black blotch between the sixth and ninth dorsal spines; an irregular chestnut-brown and blackish mark behind the eye, extending principally over the opercle.”

Now, turning to my three specimens, I find that in the two larger the dorsal-fin formula is  $\frac{12}{10}$ , in the third,  $\frac{12}{9}$ ; whilst the  
.....  
anal-fin formula is in all  $\frac{3}{5}$ . The head is scaleless, and destitute of skinny appendages, except a tag at the posterior margin of the anterior nostril, such as is seen in *Sc. scrofa*. The top of the head, the cheeks, and opercles are without scales, and distinctly pustulate or granulate. The muzzle is very short, broad, and obtuse, extending only once the diameter of the eye before it, as is stated with reference to *Sc. ustulata*. The length of the muzzle is one-fourth that of the head, whilst the width of the space between the eyes, which is deeply concave, is not quite one-sixth the length of the head. In the largest specimen, the fourth dorsal spine is the longest; in the second specimen, the anterior dorsal spines have been broken; but in the third specimen the third, fourth, and fifth spines are of the same length, as nearly as may be. Comparing the length of the head and the height with the total length, the proportions in my specimens are—



	A.	B.	C.
Head in length	2.83	3	3
Height in length	3.77	3.55	3.6.

Mr. Lowe having stated that in *Sc. ustulata* the lateral line consists of 24 scales, each marked with a little tooth or point, Dr. Günther remarked that he had evidently counted the small scales only by which the lateral line itself is constituted; but it was to be presumed that, if the transverse series of scales had been counted, their number would be nearly the same as in *Sc. scrofa*, *i. e.* from 40 to 46. Now, in my specimens, the scales furnished with a projecting duct (evidently the "little point or tooth") are 24 in number, whilst the rows of scales abutting on the lateral line are about 45.

In regard to colour, the throat and belly are of a rich pinky red; the body reddish-brown, with dark spots and pale dapplings; the dorsal, pectoral, and caudal fins are washed with orange and sprinkled with black spots, the ventral and anal fins being nearly immaculate. In the largest specimen there is a faint dark blotch between the eighth and ninth spines of the dorsal. In the second specimen, there is a well-marked dark blotch between the eighth and ninth spines, and another similar blotch between the ninth and tenth spines. In the third specimen, there is a large continuous deep black blotch extending from near the seventh spine to beyond the tenth. It is evident that there is considerable irregularity in the position and intensity of the black blotch on the dorsal fin. In other respects, the colours, as I have described them, agree sufficiently nearly with those assigned by Mr. Lowe to the species *Sc. ustulata*. But then he has stated that "the great peculiarity of that species is an irregular chestnut-brown and blackish mark behind the eye, extending principally over the opercle." Of this mark I perceive not the slightest trace in any one of my specimens. Looking, however, at the variations of colour which Mr. Lowe has himself pointed out, it may well be doubted whether any reliance can be placed upon this mark as a criterion of species.

After considering the facts here stated, I venture to think that ichthyologists will conclude that the supposed species *Scorpena ustulata* must be erased, on the ground that the fishes upon which it was founded were merely forms of *Scorpena scrofa*.

#### Fam. Scombridæ.

*Echeneis brachyptera*, Lowe,

Günther's Cat. Fishes Brit. Mus. ii. 378.

An example of this species,  $12\frac{1}{2}$  inches in length, had a sucto-

rial disk of 16 pairs of laminae. The length of this disk, compared with the total length, was as 1 to  $3\frac{2}{3}$ ; and the width of the body between the pectoral fins, compared with the total length, was as 1 to 7.15. The lower jaw was rounded and longer than the upper, which was angular, the premaxillaries forming a somewhat obtuse angle with each other. The tongue was rough at the middle with small teeth. The caudal fin was truncate. The dorsal fin had 28 rays, the anal 23; they terminate in the same vertical, short of the caudal fin. The colour was a uniform brown, with a slight trace of a white edge to the anal fin at the anterior end. The pectoral fins had rounded apices. The lateral line was straight, save for a slight rise and fall above the pectoral fins.

The following are the measurements of the principal parts in inches:—

Width of body between pectorals .....	$1\frac{6}{8}$
Dorsal, length of base .....	$3\frac{3}{4}$
„ distance from tip of snout.....	$6\frac{3}{4}$
Pectorals, length .....	$1\frac{1}{2}$
Ventrals, length .....	$1\frac{1}{4}$
Vent, distance from tip of mandible .....	6
Anal, length of base .....	$2\frac{7}{8}$
Caudal, height .....	$3\frac{1}{4}$
Eye, longer axis.....	$\frac{4}{10}$
„ distance from tip of snout.....	$1\frac{3}{10}$
Suctorial disk, length .....	$3\frac{8}{10}$
„ width.....	$1\frac{9}{10}$

*Cubiceps gracilis*, Lowe,

Proc. Zool. Soc. 1843, p. 82; Cat. Fishes Brit. Mus. ii. 389.

*Navarchus sulcatus*, Filippi e Verany, Mem. Acad. Torino, ser. 2. tom. xviii. p. 187.

D. 11.  $\frac{1}{22}$ . A.  $\frac{3}{21}$ . P. 24. V. 1.5. C. v. 9+8. v. M.B. 6.

Elongate, fusiform, compressed. Dark purplish-grey, nearly black on the back, the belly leaden-grey, the fins grey. Clothed with moderately large cycloid scales, of which the exposed part is diamond-shaped. There is a furrow along the side at the middle of the height, and halfway between this and the line of the belly there is another furrow not so long as the upper one. The lateral line is distinct from these, and is placed high up, following the curve of the back, and being straight along the tail. At the sides of the head it is forked, the branches meeting at the suprascapula. In addition to the straight longitudinal furrows already mentioned, the sides of the body are marked with transverse undulating parallel furrows, which at the middle

of the height are convex towards the head. Of these, 27 were counted between the opercle and the end of the dorsal fin.

The height compared with the total length is as 1 to  $5\frac{2}{3}$ ; the head compared with the total length is as 1 to  $4\frac{1}{2}$ . The vertex, opercles, and mandible of the unarmed head are scaly. Between the eyes it is slightly arched, and there is a low ridge along the nape and vertex, extending from the dorsal fin to the neighbourhood of the eyes. The short truncate snout is somewhat swollen at the sides, and there is a triangular depression at each side in the space between the eye, the upper jaw, and the snout. The round *eye* does not reach to the profile, and its diameter compared with the head is as 1 to  $4\frac{1}{3}$ . It is distant about a diameter from the snout, whilst the thickness of the head from eye to eye is rather more. The *nostrils* are some distance from the eye, and there are two small round openings into each sac. The nasal region is marked by some conspicuous mucus-pores. The *mouth* is small, the rictus being less than the width at the angle of the jaws. The lower jaw shuts inside the upper; the maxillary scarcely reaches back to the vertical from the anterior border of the eye. When the mouth is closed, both the premaxillary and the maxillary are covered by the broad thin bone behind them. The upper side of the mouth is formed entirely of the premaxillary, which, like the lower jaw, carries a single row of minute sharp *teeth*. These are set close together, and are rather longer in front. There is a large oval patch of minute teeth on the roof of the mouth behind the vomer, which is also armed with teeth, but there are none on the edge of the palatines. The fore part of the tongue is thin and dilated, and the hinder part is armed with a patch of teeth. The mouth, as well as the inside of the gill-covers, is black. Pseudobranchiæ are present. The rakers of the first pair of free gills have small spines on their inner sides. There is a sinus at the posterior edge of the opercle; and the edge of the interopercle is minutely denticulate. The lower border of the preopercle is striate, but the edge is simple.

The *dorsal* fin, which commences over the roots of the pectoral fins, has no free spines before it. Its anterior portion consists of twelve spines, but it is so deeply cleft between the eleventh and twelfth spines as to be almost formed into two fins. The spinous portion is triangular, and higher, though shorter, than the rest. The spines are weak; the first very short, half the length of the second. The longest spine is the fourth; the eleventh is very small; and the twelfth is attached to the soft portion of the fin, and almost equal to the ninth. The soft portion is angular, and rather produced behind, the base being scaly. The pointed *pectoral* fins are much longer than the

ventral fins, reaching back to the commencement of the anal fin. The *ventral* fins are inserted under the posterior angle of the roots of the pectoral fins, and fold back into an abdominal groove. They reach about halfway from their roots to the vent, which is placed a little before the middle of the total length. The spine is less than half the length of the next ray; the second branched ray is the longest. The *anal* fin commences close to the vent, under the fourth branched ray of the dorsal, the shape of which it copies, and opposite to the end of which it terminates. It is higher anteriorly, and it is angular and somewhat produced behind. Its three spines are short, and the base of the fin is scaly. There are no finlets behind either the dorsal or anal fins. The tail is longer than high, and its fin is deeply furcate, without scales.

The scales of the unarmed *lateral line* are about 60; and there are 20 or 21 scales in the height of the body, of which only four are above the lateral line.

Two specimens of this rare fish have been obtained, both taken in the month of January. There was only a difference of  $\frac{3}{4}$  inch between their respective lengths. The larger was an adult female containing ova.

Filippi and Verany have described the species, from Mediterranean examples, under the name of *Navarchus sulcatus*; but they have certainly committed a mistake in stating that there is a furrow on the body above the lateral line, and another below it. That line, as already described, is high up, and has two furrows below it, the upper one of which has obviously been taken by them for the lateral line. This explanation renders it still more probable that there is no specific distinction between *Cubiceps gracilis* and *C. capensis*, Smith, as Dr. Günther has suggested in his Catalogue.

The following are the dimensions of the principal parts of the larger example:—

	inches.
Total length .....	$7\frac{7}{8}$
Length to base of caudal .....	$6\frac{1}{2}$
Height in the pectoral region .....	$1\frac{3}{8}$
Thickness .....	$\frac{6}{10}$
Head .....	$1\frac{1}{8}$
Eye .....	$\frac{1}{16}$
Mouth, width at the angle of the jaws.....	$\frac{7}{20}$
Dorsal, length of base .....	$3\frac{1}{2}$
"      "      spinous portion .....	$1\frac{3}{10}$
"      distance from snout .....	$2\frac{1}{4}$
"      length of 4th spine .....	$\frac{8}{10}$
"      height of anterior part of soft portion ..	$\frac{1}{2}$
Pectorals, length .....	$2\frac{1}{2}$



	inches.
Pectorals, distance from snout .....	$1\frac{9}{10}$
„ width of base .....	$\frac{9}{20}$
Ventrals, length .....	$\frac{7}{10}$
„ distance from snout .....	$2\frac{1}{2}$
Anal, length of base .....	$1\frac{8}{10}$
„ height anteriorly .....	$\frac{11}{20}$
Tail, length .....	$\frac{8}{10}$
„ height .....	$\frac{5}{10}$
Caudal, length .....	$1\frac{3}{8}$

*Zeus conchifer*, Lowe,

Proc. Zool. Soc. vol. xiii. 1845; Ann. Nat. Hist. ser. 2. vol. x. 49.

Two examples of this rare fish, which have been recently procured, presented certain variations from the descriptions hitherto published; and these differences it may be desirable to mention. The larger specimen had a length of  $28\frac{1}{4}$  inches, with a height of  $11\frac{1}{8}$  inches; the smaller measured in length  $27\frac{1}{2}$  inches, and in height  $10\frac{1}{2}$  inches.

The normal number of the branchiostegal rays of the genus appears to be 7; but in one of my specimens there were 5 on one side and 6 on the other, in the second specimen 6 on each side.

As to the bony plates or scutella found at the base of the anal fin, Günther's Catalogue of the Collection at the British Museum (vol. ii. p. 395) speaks of 6 on each side, whereas, in one of my specimens, there were only 5, in the other 7, at each side of that fin. In the former (the larger specimen) the plates did not correspond on the two sides of the fin. On the right side the last plate but two was the largest, and the last was very small; on the left side the last but one was the largest, and the last of moderate size. In the latter specimen the plates corresponded on the two sides of the body, the last but two being the largest, and the last the smallest of each series. Between the ventral and anal fins there was, in the larger specimen, a series of 8 pairs of bony plates; in the smaller the series consisted of 7 pairs only.

The filaments of the anterior spinous rays of the dorsal are stated by Mr. Lowe to be very short; but in my larger specimen the filament of the first spine (itself  $5\frac{1}{4}$  inches long) projected  $2\frac{1}{8}$  inches beyond the tip of the spine, and those of the succeeding two projected about  $1\frac{1}{2}$  inch beyond their respective spines.

The dorsal and anal fin formula is given by Mr. Lowe thus:—D. 9 or 10 + 25 or 26. A. 2 + (1 + 25 or 26). In the larger of my specimens the rays were, D. 9 + 25. A. 3 + 24; in the smaller D. 9 + 27. A. 3 + 26.

In the British Museum Catalogue it is stated, in the diagnosis

of the genus, that there are no teeth on the palate. In both of my specimens there was a small patch of minute teeth on each palatine bone.

The "thumb-mark" on the sides of both specimens was nearly obsolete. The colour was a lilac-grey, deeper on the back, with an iridescent lustre in various parts.

• *Cyttus (Zeus) roseus*, Lowe, sp.

The genus *Cyttus* was established by Dr. Günther, in his 'Catalogue of Fishes in the Collection of the British Museum' (ii. p. 396) for the reception of fishes which are distinguishable from those falling into the genus *Zeus* by the want of bony plates along the base of the dorsal and anal fins, and by the spines of the latter fin being limited to two. The present species had been briefly defined by Mr. Lowe as a member of the genus *Zeus* in the Proc. Zool. Soc. 1843, p. 85. Two examples having lately occurred, taken in the months of February and March, I proceed to give a fuller description of this very rare fish.

D. 7 or 8 + 28 or 29. A. 1 or 2 + 29. P. 14. V. 9. B. M. 7.  
C. IV. 5 + 6. IV.

The Dory-like body is compressed, elevated, and coloured a pinky red, without maculæ, the sides, in certain lights, being silvery, washed with red. Very small scales are imbedded in a smooth shining skin, those of the lateral line being about 75 in number. Between the throat and the vent there is a series of five (Dr. Günther says three) oval bony plates, each marked with radiating striæ, and having a median crest which becomes on some of them a short spine directed backwards. In one specimen the third plate is the longest, in the other the fourth.

The height of the body is to the total length, the mouth being closed, as 1 to  $2\frac{1}{2}$ . The head, when the mouth is closed, is to the total length as 1 to  $3\frac{2}{3}$ , and is therefore less than the height. The thickness of the body behind the pectoral fins compared with the greatest height varied in the two specimens from 1 to 5 to 1 to  $3\frac{1}{2}$ , the larger being proportionally much thicker. The vertex is covered with a smooth, transparent, scaleless skin. Behind the eyes the sides of the head are striate, and at the nape there is a broad transverse depression. The large eye is round, or slightly oval, with a diameter which is contained in the length of the head, the mouth being closed, about  $2\frac{1}{2}$  times. It is placed high up, and takes part in the profile. The border of the frontal bone above it is toothed. The distance from eye to eye is about equal to the diameter. The openings into each pituitary sac are close together, above the anterior margin of the eye. The outer and posterior one is large, and obliquely oval.

In front of each smaller orifice there is a conspicuous mucopore. The cheeks are flat, and covered with a smooth skin, in which almost imperceptible scales are buried. The opercular pieces are unarmed, but the border of the preopercle is strongly striate, the striæ parallel with the margin. The mouth is excessively protrusile, the pedicel of the premaxillary being very long; and the lips are furnished with thick skin. The ambit of the open mouth is nearly circular. The maxillary is thin, transparent, and much dilated below. The jaws are roughened with bands of minute *teeth*, that in the upper jaw being very broad at the sides. There is a patch of similar teeth on the vomer, but none on the palatines.

The *branchiostegal membrane* was furnished in both specimens with seven rays on each side; small pseudobranchiæ are present.

The spinous portion of the *dorsal* fin is distinctly connected with the soft portion, the former being shorter but higher than the latter, which is more elevated behind than in front. The stout spines are strongly striate at their sides, and carry short filaments at their apices (Mr. Lowe says, "*dorsali haud filamentosa*"). The first spine is only half as long as the third, and the last spine is shorter than the first. This fin commences considerably behind the root of the pectoral fin, and a space equal to the diameter of the eye separates its termination from the base of the caudal fin. None of the rays of the soft portion are branched.

The *pectoral* fins are inserted about the middle of the height; they are rounded and much shorter than the ventral fins, reaching back not quite so far as the vertical of the vent.

The rounded *ventral* fins are large, reaching back nearly to the middle of the anal fin, and they are inserted under the roots of the pectorals. The abdomen in front of their roots is flat. The *vent* is placed under the middle of the spinous portion of the dorsal fin.

The *anal* fin, like the soft portion of the dorsal fin, which it resembles in shape, rises out of a deep groove, and has none of the rays branched. It commences under the commencement of the first dorsal, and terminates under or a little posterior to its end. None of the rays are branched. The first spine is short, stout, and subtriangular, with ribbed sides. The rounded *caudal* fin has three short spinous rays at each side.

The *lateral line* is high up, and much arched, following pretty nearly the curve of the back, and being straight on the tail. None of the fins are scaly.

The larger of the two specimens afforded the admeasurements set forth in the following table:—

	inches.
Total length, mouth open .....	13 $\frac{7}{10}$
„ „ mouth closed .....	12
Height between vent and anal fin .....	4 $\frac{6}{8}$
Head, length, mouth open .....	5
„ „ mouth closed .....	3 $\frac{3}{10}$
Eye, diameter .....	1 $\frac{3}{10}$
Eyes, distance apart .....	1 $\frac{3}{10}$
Nostrils, distance apart .....	$\frac{4}{10}$
Mouth, when open, 1 $\frac{8}{10}$ by .....	1 $\frac{1}{2}$
Premaxillary, length of pedicel ....	2 $\frac{6}{10}$
Dorsal, length of base of spinous portion ....	2
„ „ „ soft portion .....	3 $\frac{1}{4}$
„ length of third spine .....	1 $\frac{1}{4}$
Pectorals, length .....	1 $\frac{1}{2}$
„ distance behind anterior margin of eye	2 $\frac{3}{10}$
Ventrals, length .....	3
Anal, length .....	3 $\frac{5}{10}$
„ height posteriorly .....	1 $\frac{1}{10}$
Tail, height at middle .....	$\frac{9}{20}$
Caudal, length .....	1 $\frac{7}{10}$
„ span .....	3 $\frac{1}{10}$

XXVII.—On *Ephedra*. By JOHN MIERS, F.R.S., F.L.S. &c.

[Continued from vol. x. p. 140.]

THE long interval that has elapsed since the appearance of the former part of this paper demands a word in explanation. When that portion was ready for the press, I was charged by the Government of Brazil with duties arising out of the International Exhibition, which required my undivided attention for many months; and it is only now that I am able to complete the following description of all the South-American species of *Ephedra* known to me.

In the mean time Dr. Hooker's memoir on *Welwitschia* has appeared in the Linnean Transactions, which renders it incumbent on me to reconsider my former views concerning *Ephedra*. That memoir will claim attention from every botanist, not only for the careful description of the structure of this remarkable plant, but for the admirable manner in which the elaborate details of its analyses are illustrated; and it is fortunate for science that Dr. Hooker had at his command ample materials for the investigation. For the present purpose it will be necessary to refer only to such points in that memoir as may relate to *Ephedra*.

In the absence of the smallest information concerning the female flower and the ovary of *Ephedra*, and with the knowledge